

Middle Tennessee State University

2026-2027 Graduate Catalog

NOTE: Course descriptions can be found at catalog.mtsu.edu.

Mechatronics Systems Engineering, M.S.

[Engineering Technology](#)

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The Master of Science (M.S.) in Mechatronics Systems Engineering provides advanced education at the intersection of mechanical, electrical, computer, and control systems engineering. The program offers preparation to design, analyze, and optimize intelligent systems and advanced manufacturing processes that integrate hardware and software components.

Students may select from a thesis option (30-36 credit hours) emphasizing original research or a non-thesis option (30 credit hours) focusing on advanced coursework and applied projects. Both options combine foundational mechatronics coursework with electives in areas such as robotics, automation, artificial intelligence, and engineering management. Courses are delivered in flexible formats including on-ground, online, and hybrid modalities.

Graduates of the program will be prepared for careers in advanced manufacturing, robotics, automotive, aerospace, and related industries, as well as for further study at the doctoral level.

Admission Requirements

Admission to the Master of Science in Mechatronics Systems Engineering requires a

1. bachelor's degree in engineering, engineering technology, computer science, or a closely related field from an accredited institution;
2. minimum undergraduate grade point average (GPA) of 2.75 on a 4.0 scale;
3. minimum cumulative GPA of 3.0 on all graduate work and a minimum of 2.75 GPA on all undergraduate work for applicants who attended graduate school at another institution.

Application Procedures

All application materials are to be submitted to the College of Graduate Studies.

Applicant must submit

1. an application with the appropriate application fee (online at www.mtsu.edu/graduate/apply.php). Once this initial application has been accepted, the applicant will receive directions on how to enter the graduate portal to be able to submit other materials.
2. official transcripts of all previous college work;
3. a current resume or CV highlighting relevant academic, professional, and research experience;
4. a statement of purpose outlining career goals and interest in mechatronics systems engineering;

5. three letters of recommendation from academic or professional references.

The GRE is not required. However, students with an undergraduate GPA of less than 3.0 are encouraged to submit official GRE scores.

NOTE: *The admissions committee evaluates applicants based on academic preparation, relevant experience, and potential for success in the program. Conditional admission may be granted to applicants who do not fully meet the criteria but demonstrate strong potential through professional experience or other qualifications.*

Degree Requirements

The Master of Science in Mechatronics Systems Engineering requires completion of 30 semester hours for the non-thesis option and 30-36 semester hours for the thesis option. A maximum of 9 hours may be at 5000 level.

Students in the thesis option must complete and successfully defend a thesis (3-9 hours).

For students without a background in mechatronics systems engineering, four bridge courses will be offered: ENGR 2120 - Dynamics, ENGR 3530 - Electronics and Instrumentation, Math 2010 - Elements of Linear Algebra, and MATH 3120 - Differential Equations I.

Curriculum: Mechatronics Systems Engineering

The following illustrates the minimum coursework requirements. In addition, a maximum of 9 hours of thesis research (thesis option) may be required to fulfill degree requirements.

Thesis Option (30-36 hours)

Core Courses (18 hours)

- [ENGR 6010 - Artificial Intelligence in Robotics](#) 3 credit hours
- [ENGR 6020 - Advanced Control and Applications](#) 3 credit hours
- [ENGR 6030 - Reinforcement Learning for Controls](#) 3 credit hours
- [ENGR 6050 - Advanced Robotics Design and Applications](#) 3 credit hours
- [ENGR 6070 - Introduction to Autonomous Vehicles](#) 3 credit hours
- [ENGR 6080 - Industrial Internet of Things and Intelligent Systems](#) 3 credit hours

Electives (9 hours)

- [COMS 6500 - Fundamentals of Scientific Computing](#) 4 credit hours
- [CSCI 6020 - Data Abstraction and Programming Fundamentals](#) 4 credit hours
- [CSCI 6050 - Computer Systems Fundamentals](#) 4 credit hours
- [ENGR 6040 - Edge Computing and AI for Mechatronic Systems](#) 3 credit hours
- [ENGR 6060 - Introduction to Finite Element Analysis](#) 3 credit hours
- [ENGR 6090 - Real-Time Motion Planning for Autonomous Robots](#) 3 credit hours
- [ENGR 6100 - Discrete Event Systems](#) 3 credit hours
- [ENGR 6110 - Energy Systems: Theories and Applications](#) 3 credit hours
- [ENGR 6180 - Mechatronics Systems Engineering Internship](#) 1-3 credit hours
- [ENGR 6190 - Directed Research in Mechatronics Systems Engineering](#) 1-3 credit hours

- [ET 6190 - Six Sigma](#) **3 credit hours**
- [ET 6870 - Engineering Management Systems](#) **3 credit hours**
- [PGEO 5490 - Remote Sensing](#) **4 credit hours**
- [PGEO 5511 - Advanced Remote Sensing](#) **3 credit hours**
- [PGEO 5530 - Geographic Information Systems](#) **3 credit hours**
- [PGEO 5560 - Intermediate Geographic Information Systems](#) **3 credit hours**

Thesis Course (3-9 hours)

- [ENGR 6640 - Thesis Research](#) **1-6 credit hours (3 credit hours required)**

Non-thesis Option (30 hours)

Core Courses (18 hours)

- [ENGR 6010 - Artificial Intelligence in Robotics](#) **3 credit hours**
- [ENGR 6020 - Advanced Control and Applications](#) **3 credit hours**
- [ENGR 6030 - Reinforcement Learning for Controls](#) **3 credit hours**
- [ENGR 6050 - Advanced Robotics Design and Applications](#) **3 credit hours**
- [ENGR 6070 - Introduction to Autonomous Vehicles](#) **3 credit hours**
- [ENGR 6080 - Industrial Internet of Things and Intelligent Systems](#) **3 credit hours**

Electives (12 hours)

- [CSCI 6020 - Data Abstraction and Programming Fundamentals](#) **4 credit hours**
 - [CSCI 6050 - Computer Systems Fundamentals](#) **4 credit hours**
 - [COMS 6500 - Fundamentals of Scientific Computing](#) **4 credit hours**
 - [ENGR 6040 - Edge Computing and AI for Mechatronic Systems](#) **3 credit hours**
 - [ENGR 6060 - Introduction to Finite Element Analysis](#) **3 credit hours**
 - [ENGR 6090 - Real-Time Motion Planning for Autonomous Robots](#) **3 credit hours**
 - [ENGR 6100 - Discrete Event Systems](#) **3 credit hours**
 - [ENGR 6110 - Energy Systems: Theories and Applications](#) **3 credit hours**
 - [ENGR 6180 - Mechatronics Systems Engineering Internship](#) **1-3 credit hours**
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